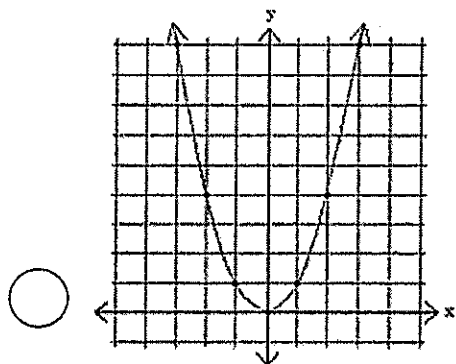


DO NOW:

<p>1. Reflection Rules for $f(x)$ graph</p> <p>a) $-f(x)$: reflect over x axis</p> <p>b) $f(-x)$: reflect over y axis</p>	<p>2. Translation Rules for $f(x)$ graph</p> <p>a) $f(x) + k$: up k units</p> <p>b) $f(x) - k$: down k units</p> <p>c) $f(x + h)$: left h units</p> <p>d) $f(x - h)$: right h units</p>	<p>3. Dilation Rules for $f(x)$ graph</p> <p>a) $af(x)$ when $a > 1$: narrower stretched vertically</p> <p>b) $af(x)$ when $0 < a < 1$: wider stretched horizontally</p>
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AIM: Review of Transformation Rules

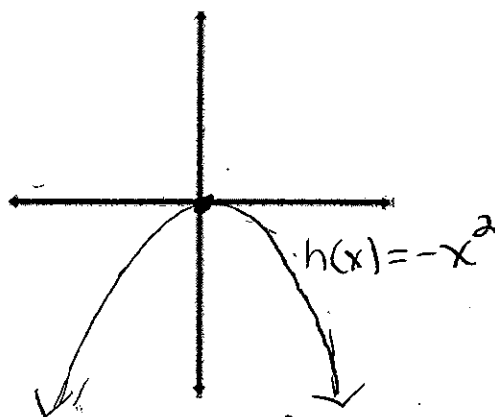
4. (a) Given: $f(x) = x^2$



State the vertex: (0,0)

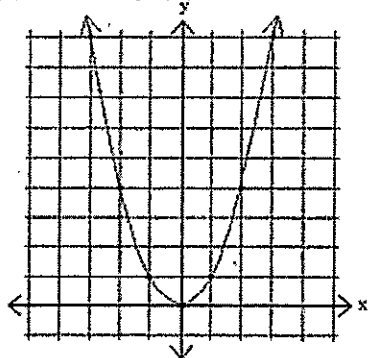
(c) Describe the transformation: The parabola is reflected over the x-axis → the vertex remains the same.

(b) Sketch: $h(x) = -x^2$



State the vertex: (0,0)

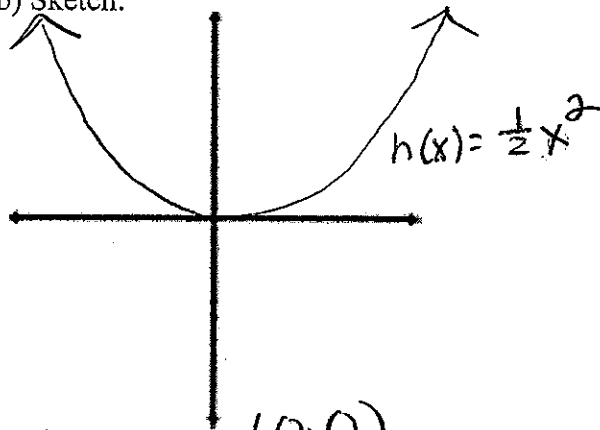
5. (a) Given: $f(x) = x^2$



State the vertex: (0,0)

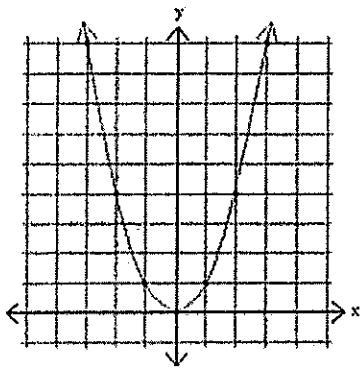
(c) Describe the transformation: The parabola is wider / stretched horizontally.

(b) Sketch: $h(x) = \frac{1}{2}x^2$



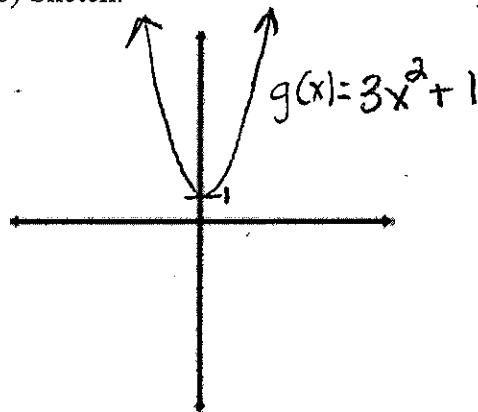
State the vertex: (0,0)

6. (a) Given: $f(x) = x^2$



State the vertex: $(0,0)$

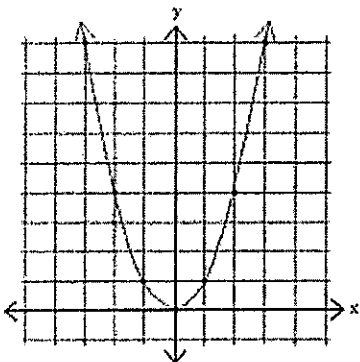
(b) Sketch: $g(x) = 3x^2 + 1$



State the vertex: $(0,1)$

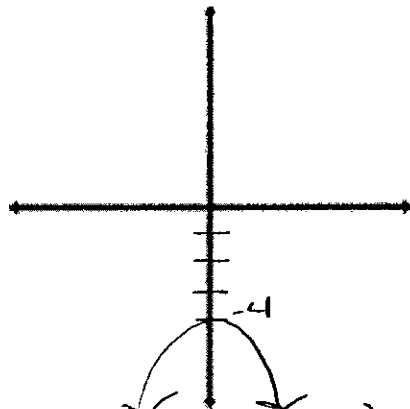
(c) Describe the transformation: the vertex is moved up on unit and the parabola is being stretched vertically

7. (a) Given: $f(x) = x^2$



State the vertex: $(0,0)$

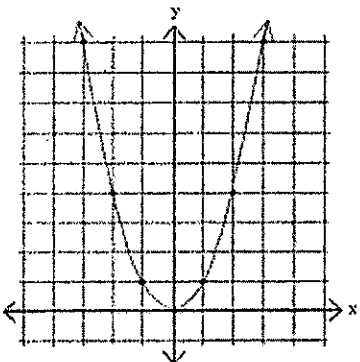
(b) Sketch: $h(x) = -x^2 - 5$



State the vertex: $(0,-4)$

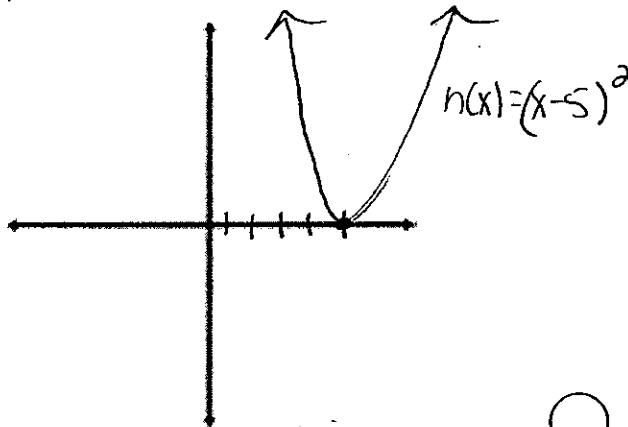
(c) Describe the transformation: the vertex is moved down 4 units and the parabola is being reflected over the x-axis

8. (a) Given: $f(x) = x^2$



State the vertex: $(0,0)$

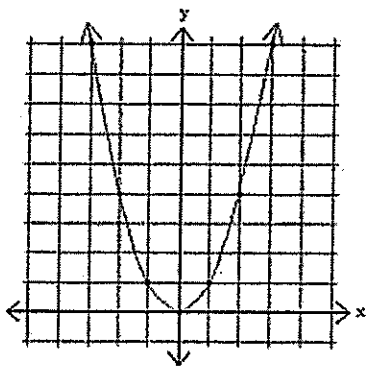
(b) Sketch: $h(x) = (x-5)^2$



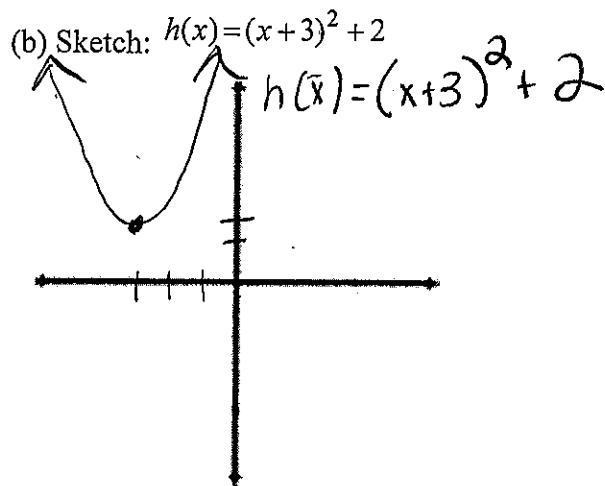
State the vertex: $(5,0)$

(c) Describe the transformation: the vertex is moved to the right 5 units

9. (a) Given: $f(x) = x^2$



State the vertex: $(0,0)$



State the vertex: $(-3,2)$

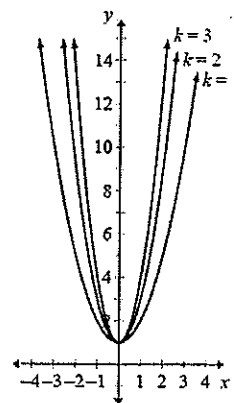
(c) Describe the transformation: The vertex is moved to the left 3 units and up 2 units

10. Which equation defines this set of parabolas?

a. $y = kx^2 + 1$ narrower stretched vertically

b. $y = \frac{1}{k}x^2 + 1$

c. $y = x^2 + k$



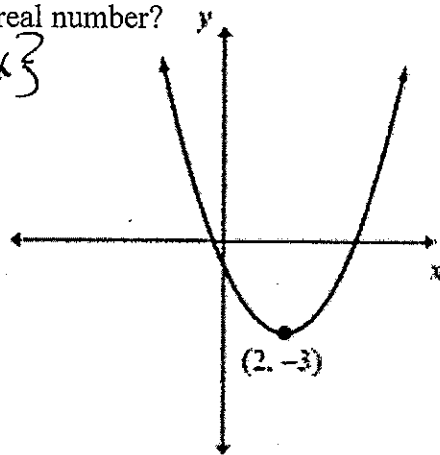
11. Which equation could define the given parabola, where a is a positive real number?

a) $f(x) = a(x-2)^2 - 3$ right 2 units {vertex} down 3 units

b) $f(x) = a(x+2)^2 - 3$

c) $f(x) = a(x-2)^2 + 3$

d) $f(x) = a(x+2)^2 + 3$



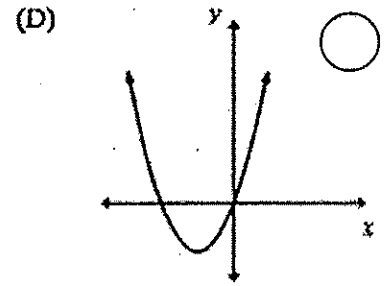
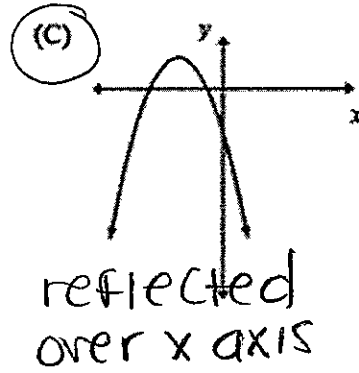
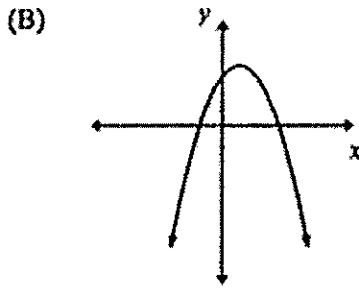
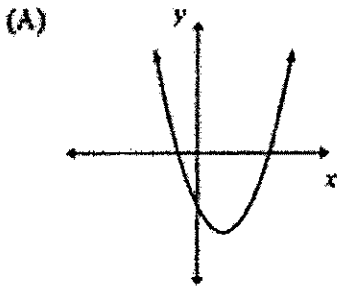
12. A parabola is defined as $f(x) = a(x-3)^2 + 10$, where a is a positive real number. As a increases, what happens to the y-coordinate of the parabola's y-intercept?

a) it decreases

b) it increases

c) it does not change

13. A quadratic function is given by $h(x) = ax^2 + bx + c$, where a and c are negative real numbers. Which of these could be the graph of $y = h(x)$?



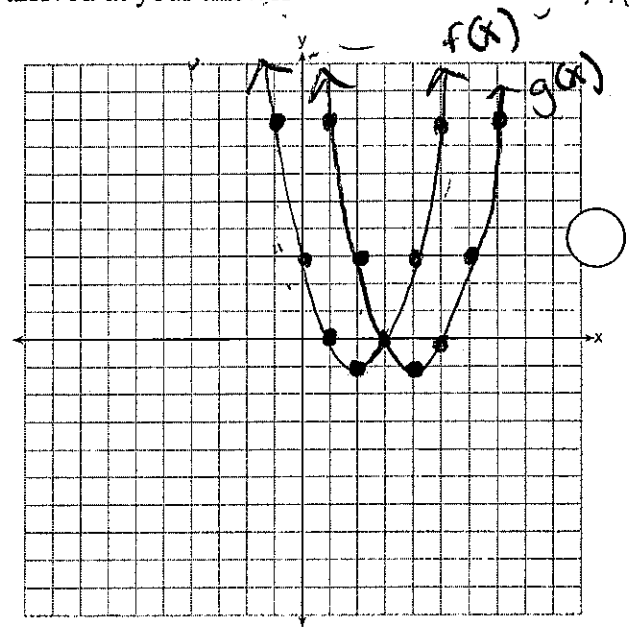
14. Identify the vertex whose quadratic function is $h(x) = (x+3)^2 + 2$: $(-3, 2)$
 left 3
 up 2

15. The vertex of the parabola represented by $f(x) = x^2 - 4x + 3$ has coordinates $(2, -1)$. Find the coordinates of the vertex of the parabola defined by $g(x) = f(x-2)$. Explain how you arrived at your answer-

x	f(x)
-1	8
0	3
1	0
2	-1
3	0
4	3
5	8

shifted 2 units right

x	g(x)
1	8
2	3
3	0
4	-1
5	0
6	3
7	8



STANDARD FORM:

$$y = ax^2 + bx + c$$

VERTEX FORM:

$$y = a(x-h) + k$$